

CLAIMS

1. Process for treating vulcanized rubber waste, particularly tyres of all sizes and of all types and/or
5 of other worn reinforced-rubber articles, such as boots, inflatable boats, this process comprising:
- coarse cutting of the said waste into fragments, and
- attacking the said fragments using a molten
10 pure base,
characterized in that the said attacking of the fragments is carried out under temperature conditions causing, in the presence of the said attacking base, deconsolidation of the vulcanized rubber waste into
15 deconsolidated solid fragments,
and in that the process furthermore comprises
- separating the said molten base from the said deconsolidated solid fragments,
- neutralizing the deconsolidated solid fragments
20 and
- recycling or reutilizing the neutralized, deconsolidated solid fragments.
2. Process according to Claim 1, characterized by the use of molten pure cast NaOH as the attacking
25 liquid.
3. Process according to either of Claims 1 and 2, characterized in that the said separation comprises sedimentation of the deconsolidated fragments, separated beforehand from the molten base, in a
30 settling and neutralizing liquid, and, after removal of the settling and neutralizing liquid, recovery of the deconsolidated fragments.
4. Process according to any one of Claims 1 to 3, characterized in that it comprises a recycling of the
35 molten pure base.
5. Process according to any one of Claims 2 to 4, characterized in that the molten NaOH treatment

temperature is at most 400°C, advantageously at most 350°C.

6. Process according to any one of Claims 1 to 5, characterized in that the deconsolidated solid fragments comprise metal fragments and fragments made of synthetic material and in that the process furthermore includes sorting between the metallic and synthetic deconsolidated fragments before they are recycled or reutilized.

7. Process according to any one of Claims 1 to 6, characterized in that the deconsolidation treatment takes place in a closed reactor, the materials to be treated completely immersed.

8. Process according to any one of Claims 1 to 7, characterized in that the neutralization uses dilute acids, preferably phosphoric acid, more advantageously waste from certain phosphoric acid solutions.

9. Plant for implementing the process for treating vulcanized-rubber waste according to any one of Claims 1 to 8, characterized in that it forms a completely closed system, with no atmospheric pollution, which comprises:

- a device (1) for melting the said pure base;
- a reactor (13) into which the said vulcanized-rubber waste, coarsely cut into pieces, and the said molten pure base as attacking medium are introduced, and in which reactor temperature conditions are applied causing deconsolidation of the vulcanized-rubber waste into solid fragments deconsolidated under the action of the attacking medium;
- a separating device (19, 20, 21) allowing the molten base serving as the attacking medium to be separated from the deconsolidated solid fragments;
- a neutralizing device (23), fed with neutralizing agent from a source (24, 25, 26)

of neutralizing agent, in which device the deconsolidated solid fragments are neutralized; and

- 5 - a device for sorting the neutralized, deconsolidated solid fragments.

10. Plant according to Claim 9, characterized in that the reactor (13) has closeable inlet and outlet openings (17 and 22), stirring equipment (16), and in that the said separating device comprises a filter (21) if necessary unclogged by a compressed-air device (44) capable of retaining inside the reactor particles greater than 1 mm.

11. Plant according to either of Claims 9 and 10, characterized in that the neutralizing device comprises a tank (23) provided with an inlet communicating with the outlet (22) of the reactor, and with an outlet, the inlet and outlet being closeable, stirring equipment (16) and a filter if necessary unclogged by the compressed-air device in the output line with extension (28), spraying equipment for facilitating the neutralization via the line (27).

12. Plant according to one or other Claim [sic] 9 to 11, characterized in that the neutralizing device comprises a tank (24) for injection of neutralized liquid and for recovery via the lines (25 and 28).

13. Plant according to one or the other Claim [sic] 9 to 12, characterized in that the neutralizing device comprises another tank (26) which contains acid waste and is connected to a mixing unit (27) in the line (25).

14. Plant according to one or the other Claim [sic] 9 to 13, characterized in that it comprises devices for cleaning the precipitates and small particles, during treatment (38, 39, 40, 41, 42, 43).

15. Plant according to one or the other Claim [sic] 9 to 14, characterized in that the sorting device comprises a device (31) for transporting the deconsolidated materials with magnetic separation of

- 14 -

the metallic materials (32), possibly combined with an eddy-current system for the non-ferrous materials.

AMMENDED SHEET